

# Compounds and Mixtures

## Notes

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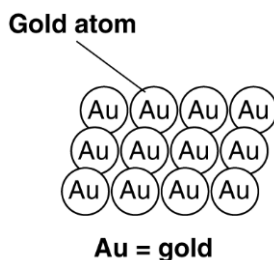
**Learning Objective:** In writing, SWBAT differentiate between a pure substance and a compound, using academic language.

### **Pure substance**

matter that is made of only one kind of particle

#### Element

matter that is made of only one kind of atom



An element CANNOT be broken down into a simpler substance

### **Compound**

a type of molecule made of two or more different elements that are joined chemically

#### Characteristics of compounds

- has different properties than the original elements
- elements are in specific amounts
- cannot be physically separated (must be chemically separated)

Examples of  
compounds

- water ( $\text{H}_2\text{O}$ )
- carbon dioxide ( $\text{CO}_2$ )
- salt ( $\text{NaCl}$ )

**Learning Objective:**

**In writing, SWBAT compare and contrast compounds and mixtures, and give examples of each using academic language.**

**Mixture**

made of two or more pure  
substances that are mixed together

Characteristics  
of mixtures

- each substance keeps its original properties
- substances can be present in any amount
- can be physically separated

Examples of  
mixtures

- air (nitrogen, oxygen, hydrogen)
- cereal (milk, flakes, raisins)
- ocean water (water, salt, oxygen)
- salad (lettuce, dressing, vegetables, etc.)

<http://www.brainpop.com/science/matterandchemistry/compoundsandmixtures/>

## Compounds and Mixtures

### Check Your Understanding

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1. What tells you that granite is a mixture?

*Granite is a mixture because \_\_\_\_\_ .*

2. When eating cereal and milk, are you eating a pure substance or a mixture?

*When eating cereal and milk, I am eating a \_\_\_\_\_ .*

3. How is a compound different from a mixture?

*A compound is different from a mixture because a compound is \_\_\_\_\_ , and a mixture is \_\_\_\_\_ .*

4. Is lemonade an element, a compound or a mixture?

*Lemonade is a \_\_\_\_\_ made of water, lemon juice and sugar.*

## Compounds and Mixtures

### Science Skill

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1. Which compound is made from the most elements?

*The compound \_\_\_\_\_ is made from the most elements.*

2. Which compounds contain oxygen?

*The compounds \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ contain oxygen.*

3. Which compounds contain carbon?

*The compounds \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ contain carbon.*

### Learning Objective:

**In writing, SWBAT compare and contrast heterogeneous and homogeneous mixtures and give examples of each using academic language.**

2 types of mixtures

- heterogeneous
- homogeneous

### Heterogeneous

a mixture in which the substances are separate

You can see the different parts of the mixture

## Suspension

a type of heterogeneous mixture in which tiny particles float in a solution



## Homogeneous

a mixture of two or more substances that are mixed completely

You cannot see the different parts of the mixture

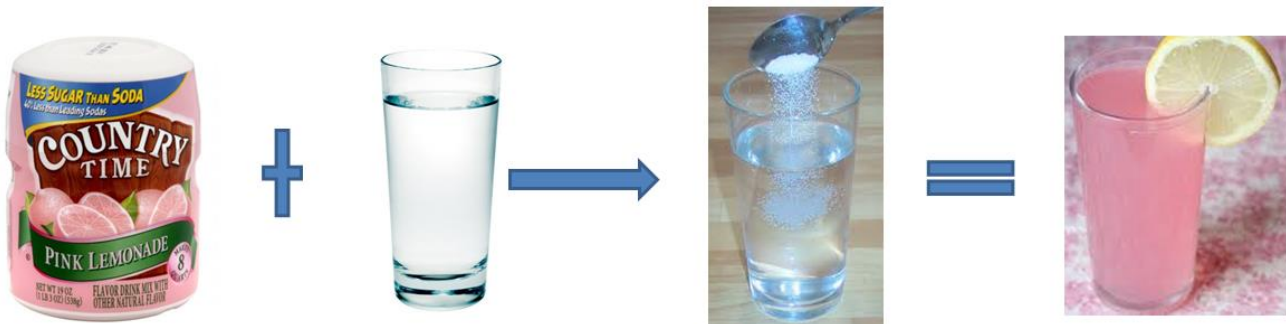


## Solution

a homogenous mixture in which one substance dissolves in another

## Dissolve

when a substance mixes with a liquid and disappears



## Solute

the substance being dissolved

Examples:

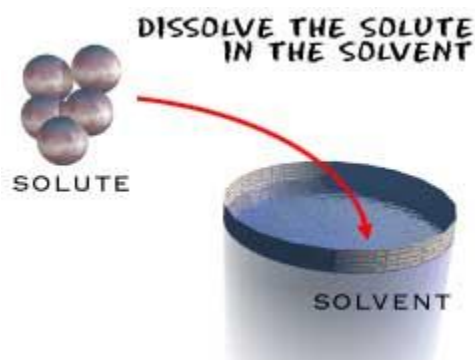
- salt
- sugar
- chocolate syrup

## Solvent

the substance that the solute is dissolved in

Examples:

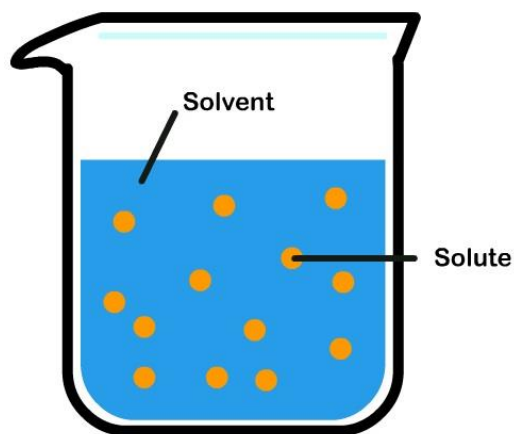
- water
- milk



Solution

= solute + solvent

In a solution, the solvent is which substance there is more of



**Solution**

### Physical change

change that does not produce a new substance

The form or appearance can change

Physical changes are easily reversed

Examples of physical changes

- melting an ice cube
- boiling water
- breaking glass
- crumpling a piece of paper
- dissolving sugar in water
- cut up an apple
- changing states of matter

# Physical Changes in Matter

- Cut
- Tear
- Folded
- Written On
- Painted



- Liquid
- Solid
- Gas
- Mixture
- Solution



## Chemical change

a change that produces a new substance

The new substance has different properties from the original substance

Chemical changes are NOT easily reversed

Examples of chemical change

- burning paper
- digesting food
- rusting of iron



- cooking an egg
- leaves changing color
- rotting food

## Chemical Changes in Matter

- New matter is formed
  - Burning
  - Rusting
  - Cooking
  - Film Processing



## Compounds and Mixtures

### Check Your Understanding

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1. What elements join to form carbon dioxide?

*The elements \_\_\_\_\_ and \_\_\_\_\_ join to form carbon dioxide.*

2. What are the two kinds of mixtures? Give an example of each.

*The two kinds of mixtures are \_\_\_\_\_ and \_\_\_\_\_. An example of a \_\_\_\_\_ mixture is \_\_\_\_\_. An example of a \_\_\_\_\_ mixture is \_\_\_\_\_.*

3. What are examples of two kinds of physical changes?

*Two examples of physical changes are \_\_\_\_\_ and \_\_\_\_\_.*

4. Is seawater a heterogeneous or homogeneous mixture? How do you know?

*Seawater is a \_\_\_\_\_ mixture because \_\_\_\_\_.*